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Stage at Diagnosis and First Course of Treatment for Prostate Cancer in Rhode Island, 1990-2003

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Among Rhode Island males, prostate cancer is the most commonly diagnosed cancer and the second leading cause of cancer death.[1] The large majority of cases are diagnosed among men in their sixties and seventies. During the period 1987-2001, age-adjusted prostate cancer incidence increased by approximately 50% in Rhode Island, with most of the increase occurring in the early 1990s.[1] Over the same period, prostate cancer mortality decreased slightly, by approximately 8%, mostly in the late 1990s.[1]

Common screening tests for prostate cancer are the prostate-specific antigen (PSA) and the digital rectal examination (DRE). According to 2004 data from the Behavioral Risk Factor Surveillance System, 55% of Rhode Island men ages 40 and older had had a PSA test within the past two years and 68% had a DRE within the past two years.[2]

The most common treatment options for localized prostate cancer are radiation therapy (external-beam radiation therapy or implantation of radioisotopes), surgery (e.g., radical prostatectomy), a combination of therapies, or no immediate treatment, including "watchful waiting." These treatment options all yield similar survival rates.[3] In addition to treatment efficacy, the patient's age, associated medical illness, and personal desires are considered when making treatment decisions.

This report presents cancer registry data from 1990-2003 on the stage of disease at diagnosis for prostate tumors diagnosed among men in Rhode Island and, for tumors diagnosed at a localized stage, trends in first-course treatment, specifically for radiation therapy and surgery.

Methods. Information on all cases of prostate cancer diagnosed in Rhode Island between January 1, 1990, and December 31, 2003, was extracted from the Rhode Island Cancer Registry (RICR), run by the Rhode Island Department of Health in collaboration with the Hospital Association of Rhode Island. Tumors were categorized by the patient's age at diagnosis (under 60, 60-69, and 70 and over), stage of disease at diagnosis (SEER Summary Stage: localized, regional, distant, and unknown), and first course of treatment (radiation, surgery, hormone therapy, chemotherapy, biological response modifiers [BRM/immunotherapy], combinations of these, and no initial treatment). All trends were analyzed as three-year moving averages (i.e, 1990-1992, 1991-1993, …, 2001-2003).

Results. The majority of prostate cancers diagnosed in Rhode Island are localized tumors. This proportion has slowly increased since the early 1990s (from approximately 55% in 1990-1993 to approximately 63% in the early 2000s), while the proportion of tumors diagnosed at a distant stage has slowly decreased. The proportion of prostate tumors diagnosed at a regional stage changed little over the 1990-2003 time period. The proportion of tumors not staged, approximately 27%, also changed little over the period. (Figure 1)

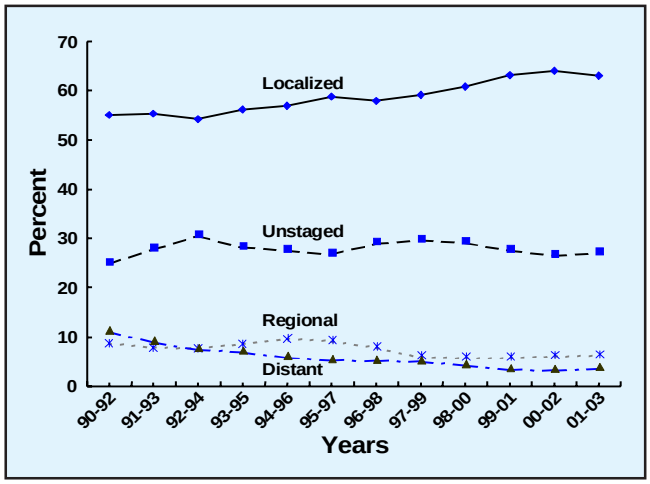

Figure 1. *Prostate cancer stage at diagnosis, 3-year moving averages, RI, 1990-2003.*

Among prostate cancers diagnosed at a localized stage, the use of radiation alone as first-course of treatment peaked at 36% in the 1994-1996 period, then decreased to 17% in 2001-2003. Radiation and surgery combined was used as a first-course of treatment in less than 10% of cases; this number decreased slightly over 1990-2003. The use of radiation in any other combination of treatments peaked in 1998-2000, then declined. Of this group, hormone therapy was used in approximately 99% of cases. In the early 1990s, surgery alone

was used to treat 32% of prostate tumors; this proportion increased to 45% by the early 2000s. The frequency of no treatment decreased dramatically until the 1997-1999 period, then increased slightly until 2003. (Figure 2)

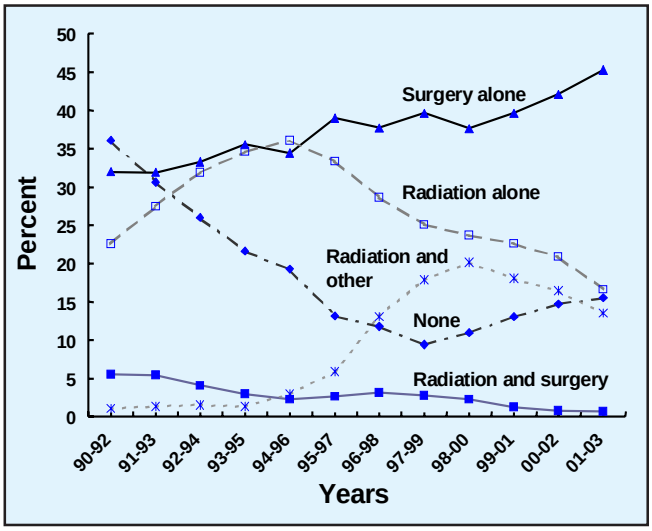

Figure 2. *Type of initial treatment for localized prostate cancer cases, 3-year moving averages, RI, 1990-2003.*

In Rhode Island, the use of radiation in the first course of treatment for localized prostate cancer is highest among men over age 70 and lowest among men under age 60. Since the late 1990s, the use of radiation in the first course of therapy has fallen across all age groups. Among men over 60 years of age, the use of radiation increased until the late 1990s before falling. (Figure 3) In contrast, use of any surgery in the first course of treatment for localized prostate cancer was highest among men under age 60 and lowest among men age 70 and over. The use of surgery in the first course of treatment increased among men under age 70. (Figure 4)

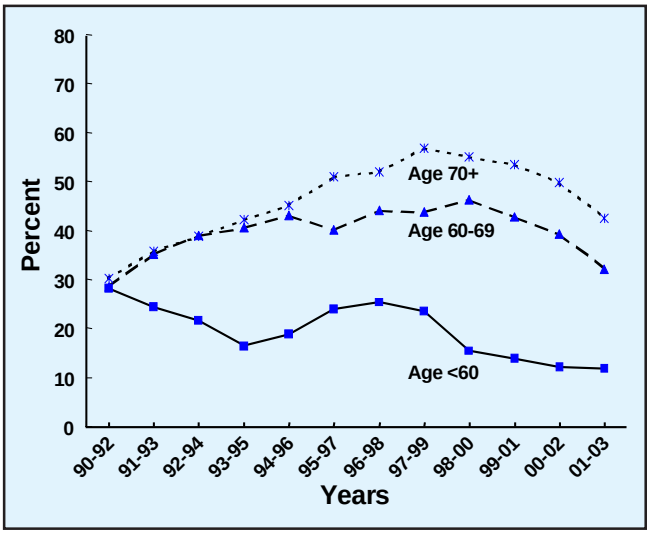

Figure 3. *Use of any radiation as initial treatment for localized prostate cancer cases by age group, 3-year moving averages, RI, 1990-2003.*

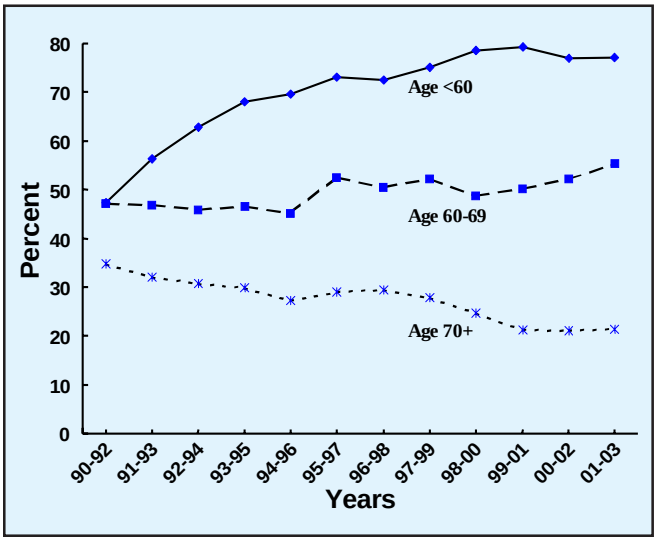

Figure 4. *Use of any surgery as initial treatment for localized prostate cancer cases by age group, 3-year moving averages, RI, 1990-2003.*

Conclusion. In the 1990s and early 2000s, a majority of prostate cancer tumors diagnosed in Rhode Island were discovered as localized tumors. The increasing number of tumors diagnosed at a localized stage and the decreasing number of tumors diagnosed at a distant stage is a promising observation; this may be attributable to increased screening, to better screening techniques, or both. Screening may also be responsible for the increase in the incidence of prostate cancer diagnoses during the early 1990s.[1]

Over one-quarter of tumors were not staged, a proportion that remained relatively constant over the 1990-2003 period. Many prostate cancer cases cannot be staged at the time of diagnosis because many of the cases are not treated surgically. Surgery helps differentiate localized tumors from tumors that have spread regionally. Thus, the tumors diagnosed among men ages 70 and over are more likely to be unstaged (38%) than tumors diagnosed among younger men (17%) because the former are much less likely than the latter to have surgery as part of the first course of treatment.

The proportion of localized prostate cancer cases diagnosed in Rhode Island that received no initial therapy decreased dramatically from 1990 until 1997-1999, followed by a slight increase. National data from 1983-1995 demonstrate a similar trend with a decline that reached its lowest point in 1992.[4] Due to the nature of RICR treatment variables, the category of no treatment may or may not indicate "watchful waiting."

In Rhode Island, the use of radiation as part of the first course of treatment for prostate cancer peaked in 1998-2000, then decreased while the use of surgery increased. These trends are consistent with the SEER Program (National Cancer Institute) which show a shift towards more aggressive therapy, specifically radical prostatectomy.[4] In Rhode Island, treatment

patterns vary by age, with a greater proportion of younger men receiving surgery and a greater proportion of older men receiving radiation therapy; this pattern is also observed in national data.[4] The shift towards surgery as a first course of treatment for localized prostate cancer may be attributable to improved surgical techniques, e.g., microsurgery, or to increased capacity for state of the art surgery, or to a reassessment of the relative effectiveness of radiation versus modern surgical procedures. Although the impact of this treatment transition of mortality rates is unclear, it may have contributed to the recent decline in prostate cancer mortality rates observed locally and nationally.[1]

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References

1. Chiaverini LC, Fulton JP, Darcy DM, Smith EO. Cancer in Rhode Island. Providence, RI: Rhode Island Department of Health. 2003.
2. Rhode Island's Behavioral Risk Factor Surveillance System. Accessed 12-2005: http://www.health.ri.gov/webquery/index.html
3. National Cancer Institute. Prostate Cancer (PDQ): Treatment. Accessed 12-2005: www.cancer.gov/cancertopics/pdq
4. Stanford JL, Stephenson RA, et al. Prostate Cancer Trends 1973-1995, Bethesda, MD: SEER Program, National Cancer Institute. NIH Pub. No. 99-4543. 1999. Accessed 12-2005: http://seer.cancer.gov/publications/prostate/

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